THE EFFECT OF GLYCERIN MAGNESIUM SULPHATE APPLICATION VERSUS COLD APPLICATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVED INTRAVENOUS THERAPY

A Dissertation submitted to

THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY CHENNAI

IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF

MASTER OF SCIENCE IN NURSING

APRIL 2015

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_____ _____

INTERNAL EXAMINER EXTERNAL EXAMINER

DECLARATION

I, 301311701 hereby declare that this dissertation entitled "**A STUDY TO ASSESS THE EFFECTIVENESS OF GLYCERIN MAGNESIUM SULPHATE APPLICATION VERSUS COLD APPLICATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVED INTRAVENOUS THERAPY AT GVN HOSPITAL TRICHY"** has been prepared by me under the guidance and direct supervision of **Prof. V.J. ELIZABETH, M.Sc (N),** Vice Principal, Thanthai Roever College of Nursing, Perambalur, as a requirement for partial fulfillment of M.Sc Nursing degree course under **The Tamilnadu Dr. M.G.R. Medical University, Chennai – 32.** This dissertation had not been previously formed and this will not be used in future for award of any other degree/ diploma. This dissertation represents an independent original work on the part of the candidate.

Place: Perambalur,
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THE EFFECT OF GLYCERIN MAGNESIUM SULPHATE APPLICATION VERSUS COLD APPLICATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVED INTRAVENOUS THERAPY.

ABSTRACT

INTRODUCTION

One of the most common complications of peripheral intravenous catheter is phlebitis that may occur upto 75-80% of hospitalized patients. The thrombus in the vein causes pain and irritation and may block the blood flow in the veins.

OBJECTIVES

To assess the effectiveness of glycerin magnesium sulphate application versus cold application on reduction of thrombophlebitis among patients received intravenous therapy.

METHOD

Study deign was True experimental, pre test-post test design. 60 patients with thrombophlebitis were recruited by simple random sampling technique and divided into two groups. Experimental group-I (N=30) received glycerin magnesium sulphate application and experimental group-II (N=30) and received cold application at the site of thrombophlebitis on thrice a day for three days. Pre-test was done by modified visual infusion phlebitis scale and post-test was done by fourth day by using same scale.

RESULT

Statistical findings revealed that the experimental group-I mean score 6.00 was lesser than the experimental group-II mean score 6.47. The obtained ‘t’ value was 2.191, significant at 0.05 level.

CONCLUSION

From the above findings, it was evidenced that glycerin magnesium sulphate application was effective than the cold application on reduction of thrombophlebitis among patients received intravenous therapy.

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CHAPTER I

INTRODUCTION

Intravenous cannulation is the cornerstone of medical practice. The use of intravenous devices is an integral part of patients care and these devices are used for the administration of fluid, nutrient, medication, and blood product. However, the placement of an intravenous cannula can have undesirable effect, the most common of which is phlebitis. Peripheral catheter related phlebitis is caused by the inflammation of the tunica intima of a superficial vein due to irritation by mechanical, chemical, or bacterial sources. If left untreated, it can lead to infection or thrombus formation.

Studies over the past 2 decades have shown that 20 to 70% of patients receiving peripheral intravenous therapy develop phlebitis. 90% of surgical patients and one third of non surgical patients receive some form of intravenous therapy. It remains a significant problem in clinical practice and causes patients discomfort, catheter replacement, prolonged hospital stay and healthcare costs.

The prevention of thrombophlebitis is very much important in hospital setup. The nurses have more responsibility to prevent and treat the occurrence of complication related to thrombophlebitis.

Early phlebitis at an intravenous site usually resolves after a cannula is removed or resited. The initial treatment for any form of phlebitis is to stop the infusion and remove the PVC (Peripheral Venous Catheter). This should be done with consideration for the patient’s needs and precipitated symptoms like fever, pain, erythema, and cord like swelling. Anti inflammatory agents and analgesics can be prescribed to treat inflammation and the pain associated with phlebitis.

Glycerin magnesium sulphate can act by the hygroscopic action help in reducing swelling by vasodilation to improve fluid reabsorption.

Cold application is a simple and inexpensive therapy which is an effective non pharmacological intervention for thrombophlebitis.Applying cold may help numb, tissue, relieve muscle spasms and swelling by decreasing blood flow.

NEED FOR THE STUDY

The practice of infusion therapy had become a considerable component of nursing that in 1981 congress proclaimed January 25th as National Infusion Nurses Day. The Infusion Nurses Society (INS) is the professional organization that establishes standards of practice to promote excellence in intravenous nursing to ensure the highest quality, cost effective care for all individuals requiring infusion therapy [INS – 2000].

Globally 60% of patients develop intravenous complication. In developed countries approximately 1, 25,000 complications reported yearly. In India complication rate is between 78-82%.The complication rate in Tamil Nadu is 85% in government hospitals and 30-60% in private hospitals.

The Infusion Nurses Society National standards of practice (Australia) stated that a nurse who administers intravenous medication or fluid must know its adverse effects and appropriate interventions to be taken before starting the infusion. Although many strategies to reduce have been suggested, because of its multi factorial etiology, prevention of complication still continues to fail. Hence nurses need to be aware of and consider certain interventions to reduce phlebitis when managing IV therapy in patients.

Mehta et al (1998) conducted a randomized double blind study with 100 surgical patients who developed thrombophlebitis after the infusion of saline, dextrose solution, blood and other fluids. The patients were treated with M.P.S. cream (Mucus polysaccharide poly sulfate) and placebo. The mean time required for the relief of thrombophlebitis in-patients receiving placebo was 126 hour, while in those receiving the M.P.S. containing cream it was 58 hour.

It is estimated that in the UK 20-80% of patients with a Peripheral Venous Catheter develop phlebitis. This broad range has also been reported in studies from other countries and suggests poor identification of phlebitis or poor reporting protocols.

It is essential for nurses to be able to identify patients who are at risk of developing phlebitis. In turn, early recognition will enable prompt intervention, minimizing disruption to treatment.

Other than this study, the following interventions will also supports my research: thrombophob ointment or gel, heparinoid application, aleovera gel, icthomal belladonna, icthomal glycerin, hot application and mucus polysaccharide poly sulphate.

Because of the similar therapeutic effect of these interventions especially in reducing pain and inflammation of intravenous site, it makes lot of confusion among nurses to practice the ideal choice of intervention which promotes patients comfort by relieving pain and inflammation. This made the investigator to be more interested to assess the effectiveness of glycerin magnesium sulphate application versus cold application in reducing pain and inflammation of infusion thrombophlebitis.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of glycerin magnesium sulphate application versus cold application on thrombophlebitis among patients received intravenous therapy at GVN hospital trichy.

OBJECTIVES

1. To assess the level of thrombophlebitis among patients received intravenous therapy.
2. To assess the effectiveness of glycerin magnesium sulphate application on reduction of thrombophlebitis among patients received intravenous therapy.
3. To assess the effectiveness of cold application on reduction of thrombophlebitis among patients received intravenous therapy.
4. To assess the effectiveness of glycerin magnesium sulphate application versus cold application on reduction of thrombophlebitis among patients received intravenous therapy.
5. To associate the post test level of thrombophlebitis after glycerin magnesium sulphate application with the selected demographic variables of patients received intravenous therapy.
6. To associate the post test level of thrombophlebitis after cold application with the selected demographic variables of patients received intravenous therapy.

RESEARCH HYPOTHESES

H_1 - There will be a significant reduction on thrombophlebitis after glycerin magnesium sulphate application among patients received intravenous therapy.

H_2 - There will be a significant reduction on thrombophlebitis after cold application among patients received intravenous therapy.

H_3 - Glycerin Magnesium sulphate application will be effective than the cold application on reduction of thrombophlebitis among patients received intravenous therapy.

H_4 - There will be a significant association between post test level of thrombophlebitis with glycerin magnesium sulphate application among patients received intravenous therapy and their selected demographic variables.

H_5 - There will be a significant association between post test level of thrombophlebitis with cold application among patients received intravenous therapy and their selected demographic variables.

OPERATIONAL DEFINITIONS

EFFECTIVENESS

The degree to which level of thrombophlebitis is reduced by glycerin magnesium sulphate application versus cold application. It is measured by modified visual infusion phlebitis scale.

COLD APPLICATION

It refers to application of cold with the help of ice cubes for a period of 15 minutes thrice a day for 3 days at the site of thrombophlebitis.

MAGNESIUM SULPHATE APPLICATION

It refers to preparation of solution in amount of 20 gm magnesium-sulphate mix with 50 gm glycerin, applied for a period of 15 minutes thrice a day for 3 days at the site of thrombophlebitis.

INTRAVENOUS THERAPY

Administration of fluids and medication into vein through use of peripheral cannula.

TROMBOPHLEBITIS

It is inflammation of a vein due to a blood clot in a vein located just below the skin surface. It refers to observable and palpable area of upper extremity around the affected vein based on the sign and symptom such as pain, cord like swelling, tenderness, warmth, redness, and loss of function of affected arm.

ASSUMPTIONS

Glycerin magnesium sulphate application may reduce the discomfort and pain for thrombophlebitis.

Cold application may reduce the discomfort and pain for thrombophlebitis.

LIMITATIONS

The sample size was limited to 60.

The study was limited to only one hospital.

Data collection period was limited to 4 weeks.

PROJECTED OUTCOME

The glycerin magnesium sulphate application is effective than the cold application on thrombophlebitis among patients received intravenous therapy.

CHAPTER –II

REVIEW OF LITERATURE

A literature review is summary of previous research on a topic which can be either a part of a large report of a research project, a thesis or bibliographic essay that is published separately in scholarly journal. The purpose of literature review is to convey the reader what knowledge and ideas have been established on topic and what are the strength and weaknesses.

PART – I

The review of related literature is organized under the following section

SECTION - A Studies related to thrombophlebitis among clients with intravenous Therapy.

SECTION - B Studies related to magnesium sulphate and other topical drug therapies.

SECTION -C Studies related to magnesium sulphate application versus cold application.

SECTION- D Studies related to hot and cold applications.

SECTION – A Studies related to thrombophlebitis among clients with intravenous therapy.

Martinez JA etal (2001) conducted a prospective study of 569 IV cannula including 492 peripherally inserted cannula in a country hospital. 11.5% of patients developed thrombophlebitis and mean time situ was 3.0 days. The chi square findings showed the contributing factors as age above 65 years, female sex, insertion of cannula into back of hand and IV infusion of drug like aminophylline and not using heparin.

Hunter ES, Bell E etal (2002) stated in the article relationship of local IV complications and the methods of intermittent IV access. Infiltration, infection and thrombophlebitis are considered the most frequent complications of IV therapy. The purpose of the study was to determine the incidence of complications during IV infusion which depends on whether the IV tubing is directly connected to the infusion device or the tubing connected to the latex part of an IV lock using a needle. They concluded that direct connection of tube to the infusion device had the higher incidence of complication.

Homes and Holmen (2003) conducted a descriptive study to identify the risk associated with duration of IV catheter in development of thrombophlebitis, with 100 samples in VA center, at Lova city. Correlation findings shows that the IV catheter removed and restarted after 72 hours carries less risk of developing complication than the therapy continued to 96 hours.

Lanbeck Peter (2004) conducted a descriptive study to analyze the perception of risk factors for infusion phlebitis among Swedish nurses. Questionnaire was developed to assess the perception of nurses. The finding revealed that a majority of the nurses believed that insertion of a peripheral venous catheter in the forearm and catheter rotation within 48 hours was protective.

Ahlquist (2006) conducted a cross section survey to evaluate the outcome of implemented evidenced based clinical guidelines for frequency of thrombophlebitis, nurses care, handling and documentation of peripheral intravenous cannula. The finding of this study revealed that the sign of thrombophlebitis increased by 21% ($P < 0.01$) and the use of cannula size 0.80 mm increased by 22% ($P< 0.001$). Nurses' documentation of peripheral intravenous cannula improved significantly ($P < 0.001$). This study conclude that implementation of the guidelines resulted in significant improvement by means of

decrease frequency of signs of thrombophlebitis, increased application of smaller cannula size (0.80 mm) as well as of the nurses documentation in the patients record.

Singh R, Bhandarg S Pun KD (2008) A study was conducted to compare the rates of phlebitis of peripheral intravenous lines left in place for 72 hours versus rates of those left in place 96 hours. Results were a total of 2503 peripheral lines and the overall phlebitis rate was 6.8%. It was estimated that in 1 month approximately 300 intravenous lines potentially could be prolonged beyond 72 hours; 215 lines were changed at 72 hours despite no signs of inflammation, 61 lines were kept till 96 hours, and 19 lines were kept beyond 96 hours. Conclusion of the study was Phlebitis rate for our peripheral intravenous catheters at 96 hours was not significantly different from that at 72 hours.

Higginson R Parry A (2011) A study was done on Relevance and complications of intravenous infusion. Objective of the study was Insertion of peripheral venous catheters (PVCs) is current practice within the hospital environment and particularly in the emergency department(ED). During the study 2515 patients over 16 years of age attended the unit. Overall, 390PVCs were followed until the time of their removal. Mean duration of IV infusion was 28hours. Among these 390 patients, 62 (15.9%) developed complications, of which 54 (13.6%) had thrombophlebitis and 9 (2.3%) developed local infection. Conclusion of the study was Insertion of PVC is common practice especially in EDs.

Ruchi saini (2011) Clinical variables such as the site of vein, type of fluid, flow rate, number of days on flow had significant association with the pain perception or swelling. Total of 168 peripheral intravenous cannula studied and identified that inappropriate aseptic technique, involvement of elbow joint, soiling,

longer duration of more than 24 hours etc, as the most important risk factors for the development of phlebitis.

SECTION – B Studies related to magnesium sulphate and other topical drug therapies.

Macklin D (2003) A quasi experimental study was conducted on “the effectiveness of four modalities of nursing interventions on phlebitis icthamol belladonna, icthamol belladonna with hot fomentation, glycerin magnesium sulphate, and glycerin magnesium sulphate with hot fomentation”. There was a significant difference seen among the four modalities of treatment for the reduction of pain, erythema, swelling, indurations in the phlebitis site $p<0.01$. Mean pre score of all dependant variables among patients in all groups were almost same, but in post treatment the maximum reduction was found among patients in Group III, i.e. who had treated with magnesium sulphate with glycerin.

Huo (2006) among 57 children with peripheral phlebitis caused by intravenous indwelling needle in china. 50 % magnesium sulphate solution was used in the control group, while the mean length of days reported to treat thrombophlebitis for control group was (5.17+_1.15) days and for observation group (2.16+_0.39) days respectively ($p <0.01$). The investigator found that the nursing knowledge and practice in relation to peripheral intravenous therapy are limited to very few reported instances of use of glycerin MgSO4 compress on IV therapy. Hence the present study was conducted to evaluate the effect of Glycerin MgSO4 compress on IV therapy.

Jung Huang (2006) investigated the hyperbaric oxygen therapy versus magnesium sulphate with functional training on infiltration and phlebitis on 60 people were selected and conculeded both were effectiveness in reducing thrombo phlebitis.

Usuloy E Metes (2008) conducted on the effectiveness of nursing interventions (ichthamol glycerin, thrombophob, hot fomentation) on patients with phlebitis related to peripheral intravenous infusion. The sample consist of 45 subjects and three treatment was administered to 15 patients for twice in a day for three days. The study concluded that treatment with warm ichthamol glycerin dressing was most effective ,pre treatment score 7.67 decreased to 1.47 on the third post treatment day with warm ichthamol glycerin.

Saini B, Paul p (2011) A quasi experimental study was conducted on "the effectiveness of cold application, heparinoid and magnesium sulphate application on thrombophlebitis" among patients in selected hospitals of Indore. The findings of the study indicated that the computed 't'value of cold application group [t14=14.33], heparinoid application group[t14=20.82],and magnesium sulphate application group[t14=20.82] were statistically significant, which suggested that all three interventions were effective in reducing the signs and symptoms of thrombophlebitis. The computed 'F'ratio of all the three groups [F2.42=10.10] showed that three types of application differ significantly. However, the mean difference of magnesium sulphate group [18.34] was higher than the cold application [13.33] and heparinoid application[12.8] group. This concluded that magnesium sulphate application was most effective intervention in reducing the thrombophlebitis.

SECTION –C Studies related to magnesium sulphate application versus cold application.

Lin Jing (2001) observed the curative effect of aloevera versus magnesium sulphate dressing on thrombophlebitis in the control group 80 patient with external application of fresh aloevera and in experimental group 74 patient treatment with

magnesium sulphate group and their effects were compared. Result of the aloevera group were 91.75% magnesium sulphate group had only 81.62% has no significance difference between the effect of magnesium sulphate better than commonly used drug.

MS.Sharmile (2005) investigated the effectiveness of magnesium sulphate application versus cold application was reducing swelling and pain in railway hospital perambur out of 60 cases with thrombophlebitis, they were randomly divided of 6 hours. After the completion of 6 hours post assessment were done. The pre assessment mean was 3.8 and the post assessment mean was 0.5. She has found that the magnesium sulphate dressing had significant difference in reducing the swelling and pain perception at infusion site than cold compress.

SECTION - D Studies Related to hot and cold applications.

Saeki Y (2002) conducted a clinical trial at Nagano city, Japan 20 samples of patient with IV therapy by using visual analog scale. Unpaired 't' test was used to compare the hot and cold application in reducing pain sensation. The results suggest that application of cold promotes relief of pricking pain sensation and suppression of autonomic response ($p<0.001$) and that application of heat ($p<0.01$) has no such effect.

Chinnamma Verghese (2005), conducted a study on prevention and reduction of pain, bruise and hematoma by "moist ice pack" application on the site of subcutaneous heparin injection. The sample size consists of 100 injection sites each in the experimental and control group respectively. Recognizing the physiological responses of the cell / tissue to injury or trauma, the "moist ice pack" procedure was performed for 5 minutes at the subcutaneous heparin injection site twice daily for three days in the experimental group. Assessment of pain, bruise and hematoma were carried out at 12, 48 and 72 hours in the both the groups.

Results were statistically significant in favor of the use of moist ice pack while comparing the pain and bruise at subcutaneous injection site between experimental and control group at 12, 48 and 72 hours in the current study ($p < 0.05$ and $p < 0.01$).

Biswas D (2006) A quasi-experimental study was conducted at Portland, on "effect of warm and cold application on resolution of IV phlebitis". The purpose of the study was to determine the effect of cold application on the intensity of pain and speed of resolution of extravasation of a variety of commonly used intravenous solution. The findings revealed that application of warmth to sites of IV phlebitis produced faster resolution of extravasation than did cold application at a significant difference, $F=14.38$, $p<0.001$.

PART- II

CONCEPTUAL FRAMEWORK

The conceptual framework of the study was derived from the modified Wiedenbach's Helping Art of clinical Nursing theory (1964). According to the theory, the nursing is involved in three components.

- ❖ Identifying a need for help
- ❖ Ministering needed plan
- ❖ Validating that need for help was met

In this study the nurse investigator attaining the goal through 3- steps of Wiedenbach's prescriptive theory.

STEP- I
IDENTIFYING A NEED FOR HELP

General Information

For collecting general information the investigator collect information, generally through Demographic variable and through pre-test collect information about thrombophlebitis of No, mild, moderate and severe.

The Central Purpose

According to the theory, the central purpose refers to what the nurse wants to accomplish. It is the overall plan towards nurse strives. It transcends the immediate intend of the assignment or task by specially directing activities towards the patient's goal.

In this study the central purpose was the reduction of the thrombophlebitis.

The Prescription

According to the theory the prescription refers to the plan of care for patients. It specifies the nature of action that will fulfill the nurse's central purpose and the rationale for that action. After the prescription is established, the nurse can implement it through the nursing care plan.

STEP-II
MINISTERING NEEDED PLAN

The nurse formulates a plan for meeting the patients need for help based on available resources. What the patients thinks, knows, can do and has done plus what the nurse thinks, knows, can do and has done; the nurse presents the plan to the patients and the patient's response to it.

In this study the glycerin magnesium sulphate application versus cold application is the implementation of experimental group I versus group II who have received intravenous therapy.

Realities

It refers to the physical, physiological, emotional and spiritual factors that come into play in a situation involving nursing action. Wiedenbach's defines the 5- realities as agent, recipient, goal, need and framework.

The agent who is the practicing nurse and her delicate characterized by personal attributes, problems, capacities and commitment and conference to provide nursing care. In the study it refers to the researcher; direct all action towards the goal.

In this study recipient are the patient who has the problems and symptoms of thrombophlebitis

The goal is the nurse's desired outcome the nurse wishes to achieve. In this study it refers to the reduction of thrombophlebitis.

The mean comprise the activities and devices used by the nurse to achieve the goal. This includes specific skills, procedures, techniques and devices that may be used to facilitate nursing practiced. In this study the intervention of thrombophlebitis using glycerin magnesium sulphate application versus cold application thrice a day and for three days.

The framework consists of the human, environment, professional and organizational facilities. In this study thrombophlebitis among patients received intravenous therapy at GVN hospital, Trichy.

STEP-III

VALIDATING THAT THE NEED FOR HELP WAS MET

The nurse perceives the patient's behavior consistent or inconsistent with the nurse's concept of comfort of capability. It refers to a collection of evidence that shows patients need have been meet and that his/her functional ability has been restored as a direct result of the research action. It is based on patient's oriented evidence. This step involves post-test assessment and that score after ministering analysis to infer the outcome.

In this study the post test was done through Modified Visual infusion phlebitis scale. According to the result of the pre test score describe the No, minimal, mild, moderate thrombophlebitis in experimental group-I and II.

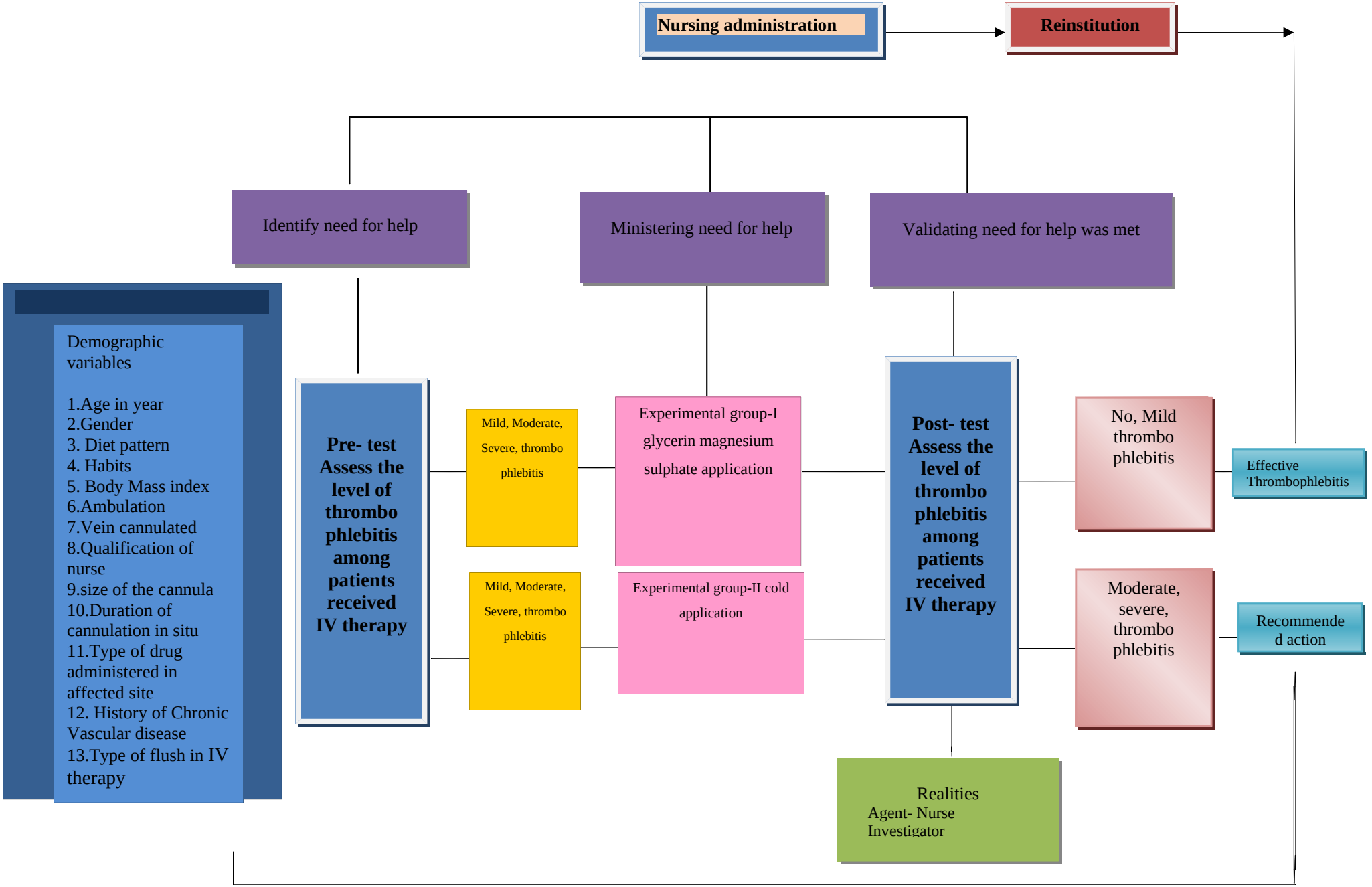


FIGURE -1 Wiedenbach's Helping Art to clinical Nursing theory (1964)

CHAPTER III

RESEARCH METHODOLOGY

This chapter describes the methodology followed to assess the effectiveness of glycerin magnesium sulphate application versus cold application on thrombophlebitis among patients received intravenous therapy.

RESEARCH APPROACH

Evaluative research approach.

RESEARCH DESIGN

True Experimental Design - pre test and post test design

GROUP	PRE TEST	TREATMENT	POST TEST
EXPERINENTAL GROUP I	O_1	X_1	O_2
EXPERINENTAL GROUP II	O_1	X_2	O_2

Experimental group I : Glycerin magnesium sulphate application

Experimental group II : Cold application

O_1 : Pre test level of thrombophlebitis in experimental group I and II

X_1 : Glycerin Magnesium sulphate application

Dependent Variable

Thrombophlebitis among patient received intravenous therapy.

Independent Variable

Glycerin magnesium sulphate application, cold application.

SETTING OF THE STUDY

The wards and ICU in GVN hospital, Trichy.

STUDY POPULATION

The patients in the wards and ICU.

SAMPLE

The sample consists of patients admitted in the wards and ICU who have thrombophlebitis and fulfill the Inclusive criteria.

SAMPLE SIZE

60 Sample, 30 in glycerin magnesium sulphate application,

30 in cold application

SAMPLING TECHNIQUE

SELECTION CRITERIA

Inclusion Criteria

- Patients who are in the age group 21 to above 60.
- Patients who have developed thrombophlebitis due to intravenous therapy.
- Patients who are admitted in all wards.
- Patients who are with phlebitis in the fore arm.
- Patients who are willing to participate.

Exclusion Criteria

- Patients who are not willing to participate in this study.
- Patients who are on cancer drugs.
- Patients who are with paralytic and unconscious condition who are not able to perceive pain patients who have a pre existing skin condition (EX:Dermatitis, Eczema)

DEVELOPMENT AND DESCRIPTION OF THE TOOL

The investigator adapted the visual infusion phlebitis scale with modification as measurement scale for data collection.

DESCRIPTION OF THE DATA COLLECTION TOOL:

SECTION-A

Interview guide which consist of question of the demographic data .

SECTION-B

Modified visual infusion phlebitis scale. It consist of 5 components of pain, cord like swelling, tenderness, warmth, redness. It consists range from scores 1 to 4.

SCORING AND GRADING PROCEDURE:

SCORING

The score will be awarded from 1-4 as per the criteria given in 5 components of modified visual infusion phlebitis scale and this score obtained will be graded as follows .The total score range from 5-20.

GRADING PROCEDURE

SCORE	LEVEL OF THROMBOPHLEBITIS
5	No thrombophlebitis
6-10	Mild thrombophlebitis
11-15	Moderate thrombophlebitis
16-20	Severe thrombophlebitis

For content validity the research experts were requested to give their opinion about the content areas and it relevance and appropriateness of the item. Content validity obtained from five experts from the department of medical and surgical nursing. Items were modified based on their suggestion.

RELIABILITY

The researcher has adapted the standardized visual infusion phlebitis scale with only one modification of one section of pain component and used it as modified visual infusion phlebitis scale. The reliability was not assessed and it was already established.

PILOT STUDY

The pilot study was done at GVN Hospital Trichy between 19.5.14 to 26.5.14 to test the feasibility, relevance and practicability. Permission was sought from the Chairman, GVN Hospital Singarathope, Trichy. The objectives of the study were explained to the chairman and the nursing superintendent. The consent was obtained from the entire sample after explaining the purpose of the study, then the role and their doubts were clarified. The pilot study was conducted among 6 patients, 3 on each group, they selected by simple random sampling technique. The intervention of 50 ml of glycerin mixed with 20 gram of magnesium sulphate applying for thrombophlebitis thrice a day for 3 days experimental group 1 and application of cold applied for thrombophlebitis thrice a day for three days given for experimental group II. The post test done with the same scale on the fourth

Data collection was done from 4.6.14 to 4.7.14 at GVN Hospital Singarathope Trichy. patients who received intravenous therapy were screened for thrombophlebitis and the samples were recruited by simple random sampling technique in the medical, surgical, pre operative and post operative and ICU ward. Data was collected all the days. The purpose of the study was explained, written consent was obtained from all patients before the study. Demographic variables data collected and the thrombophlebitis was assessed with using modified visual infusion phlebitis scale as pretest on the first day glycerin magnesium sulphate application versus cold application and to maintain thrombophlebitis among patient received intravenous therapy for thrice a day for three days was done post test was done with the same scale on the fourth day. The researchers herself collected the data by using observation method.

PLAN FOR DATA ANALYSIS

It was planned to analyze the collected data by using descriptive and inferential statistics.

Descriptive Statistics

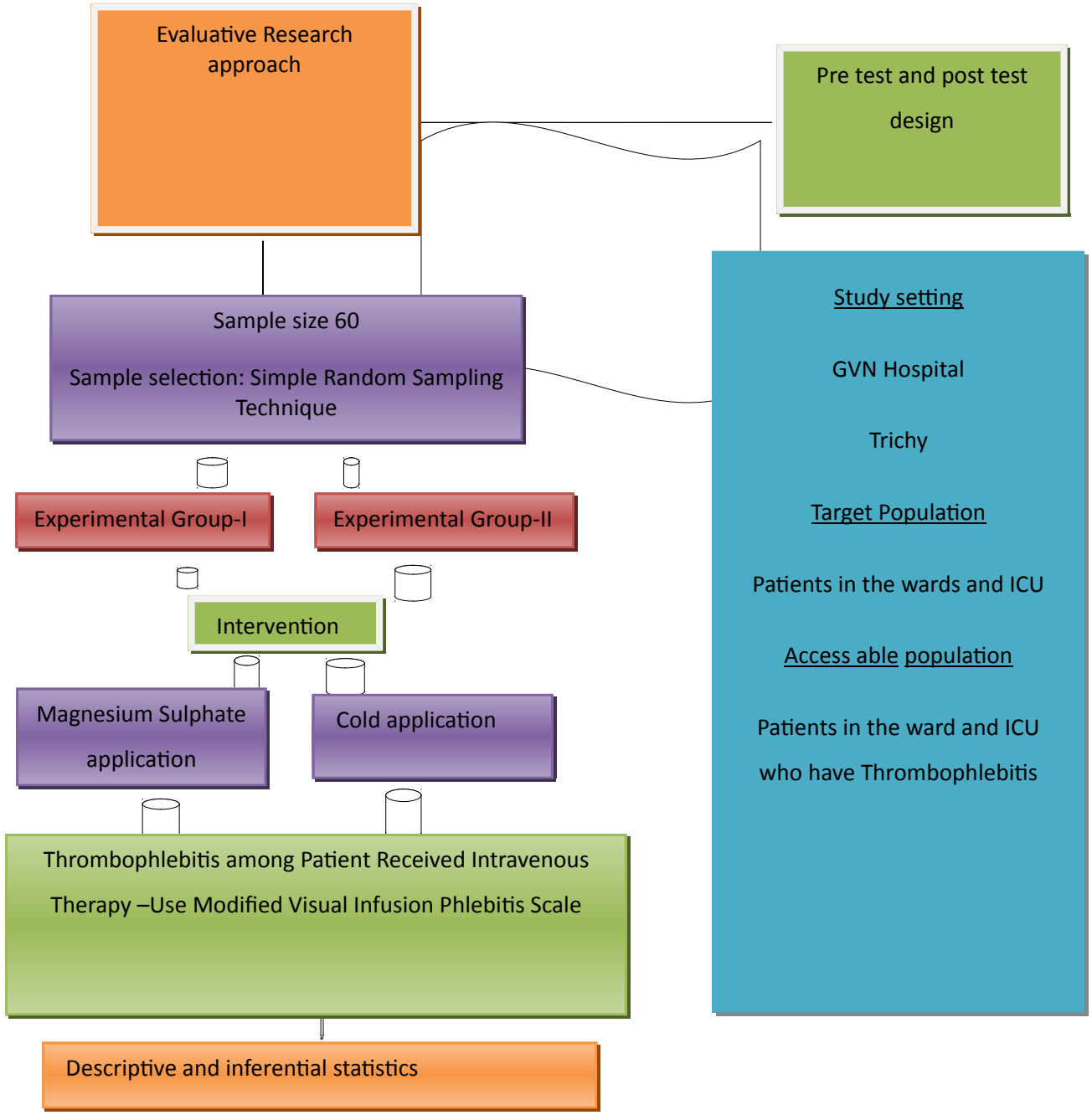
1. The frequency and percentage distribution will be used to analyze the demographic variables and the level of thrombophlebitis among patients received IV therapy.
2. Mean and Standard deviation will be used to assess the effectiveness of glycerin magnesium sulphate application versus cold application on

1. Independent‘t’ test will be used to assess the effectiveness between two groups.
2. Chi square test will be used to find out the association of post test scores with their selected demographic variables.

ETHICAL CONSIDERATIONS

1. The study was performed after getting approval from the dissertation committee, Thanthai Roever College of Nursing.
2. Permission was obtained from the chairman of GVN Hospital Trichy.
3. The written consent was obtained from each study participant before collecting data.
4. Confidentiality was maintained throughout the study.

SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY



DATA ANALYSIS AND INTERPRETATION

The analysis is a process of organizing and synthesizing the data in such a way that the research question can be answered and hypothesis tested (Polit and Hungler, 2011).

This chapter deals with analysis and interpretation of the data collected from 60 patients received intravenous therapy. The data was organized, tabulated and analyzed according to the objectives. The findings are presented under the following sections.

ORGANIZATION OF THE DATA

SECTION I:

Frequency and percentage distribution of demographic variables of patients with thrombophlebitis in experimental group-I and II.

SECTION II:

A. Pre test and post test level of thrombophlebitis among patients received intravenous therapy in experimental group-I.
B. Pre test and Post test level of thrombophlebitis among patients received intravenous therapy in experimental group-II.

SECTION III:

C. Comparison of post test thrombophlebitis mean score and standard deviation among patients received intravenous therapy in experimental group-I and group II.

SECTION IV:

A. Association of the post test level of thrombophlebitis among patients received intravenous therapy in experimental group-I with their selected demographic variables.
B. Association of the post test level of thrombophlebitis among patients received intravenous therapy in experimental group-II with their selected demographic variables.

SECTION I

Table 1:

Frequency and percentage distribution of demographic variables of patients with thrombophlebitis in experimental group - I and II.

N = 60(30+30)

Demographic Variables	Experimental group-I		Experimental group-II	
	No.	%	No.	%
Age in years				
21 – 30	7	23.33	8	26.67
31 – 40	4	13.33	5	16.67
41 – 50	6	20.00	6	20.00
51 – 60	6	20.00	9	30.00
Above 60	7	23.33	2	6.67
Gender				
Male	20	66.67	18	60.00
Female	10	33.33	12	40.00
Diet pattern				
Vegetarian	11	36.67	11	36.67
Non-vegetarian	19	63.33	19	63.33
Habits				
Cigarette smoking	0	0.00	0	0.00
Alcohol	11	36.67	9	30.00
Tobacco	7	23.33	5	16.67
None	12	40.00	16	53.33
Body Mass Index (BMI)				
Underweight	4	13.33	4	13.33
Normal	18	60.00	12	40.00

Demographic Variables	Experimental group-I		Experimental group-II	
	No.	%	No.	%
Vein cannulated				
Basilic vein	1	3.33	0	0
Cephalic vein	18	60.0	20	66.67
Median vein forearm	11	36.67	10	33.33
Qualification of nurse who cannulated the patient				
Nurse	13	43.33	14	46.67
Ward Incharge Nurse	9	30.0	7	23.33
Student Nurse	6	20.0	8	26.67
Physician	2	6.67	1	3.33
Size of the cannula				
16G	0	0.00	0	0.00
18G	16	53.33	12	40.00
20G	11	36.67	12	40.00
22G	3	10.00	6	20.00
Duration of cannulation situ				
0 - 1 day	8	26.67	9	30.00
2 - 3 days	17	56.67	15	50.00
Above 3 days	5	16.67	6	20.00
Type of drugs administered in affected site				
Antibiotic	10	33.33	15	50.00
Anticoagulant	6	20.00	5	16.67
Inotropes	3	10.00	3	10.00
Other drugs	11	36.67	7	23.33
History chronic vascular disease				
Yes	0	0.00	1	3.33
No	30	100.00	29	96.67
Type of flush in IV therapy				

Table 1:

Frequency and percentage distribution of demographic variables of patients with thrombophlebitis in experimental group-I and II.

- Majority 7 (23.33%) of patient were in the age group of 21-30 years, above 60 years in experimental group-I and in experimental group-II 9 (30.00%) belongs to age group 51-60 years.
- Majority 20 (66.67%) in experimental group-1 and 18 (60%) of experimental group-II were male.
- Majority 19 (63.33%) of the sample were Non-vegetarian in experimental group -1 and 19 (63.33%) of experimental group-II were non –vegetarian.
- Majority 12 (40%) of experimental group-I and 16 (53.33%) of experimental group-II had no habits.
- Majority 18 (60%) in experimental group-1 and 12 (40%) in experimental group –II had normal body mass index.
- Majority 13 (43.33%) in experimental group-I and 12 (40%) in experimental group-II were mobilized ambulation.
- Majority 18 (60%) of experimental group-I in Cephalic vein and 20 (66.67%) of experimental group-II were using vein cannulated.
- 13 (43.33%) of experimental group-I on staff nurse and 14 (46.67%) of experimental group –II were qualification of nurse.
- Majority 16 (53.33%) in 18 gauge needle in experimental group-I and12 (40%) in experimental group-II were size of the cannula.

- Majority 30 (100%) of experimental group-I and 29 (96.97%) of experimental group-II had no history of chronic vascular disease.
- Majority25 (83.33%) of experimental group-I and 25 (83.33%) of experimental group-II were administered with saline in the intravenous therapy.

FIGURE 2a Percentage distribution of body mass index among the patients in experimental group –I and experimental group –I

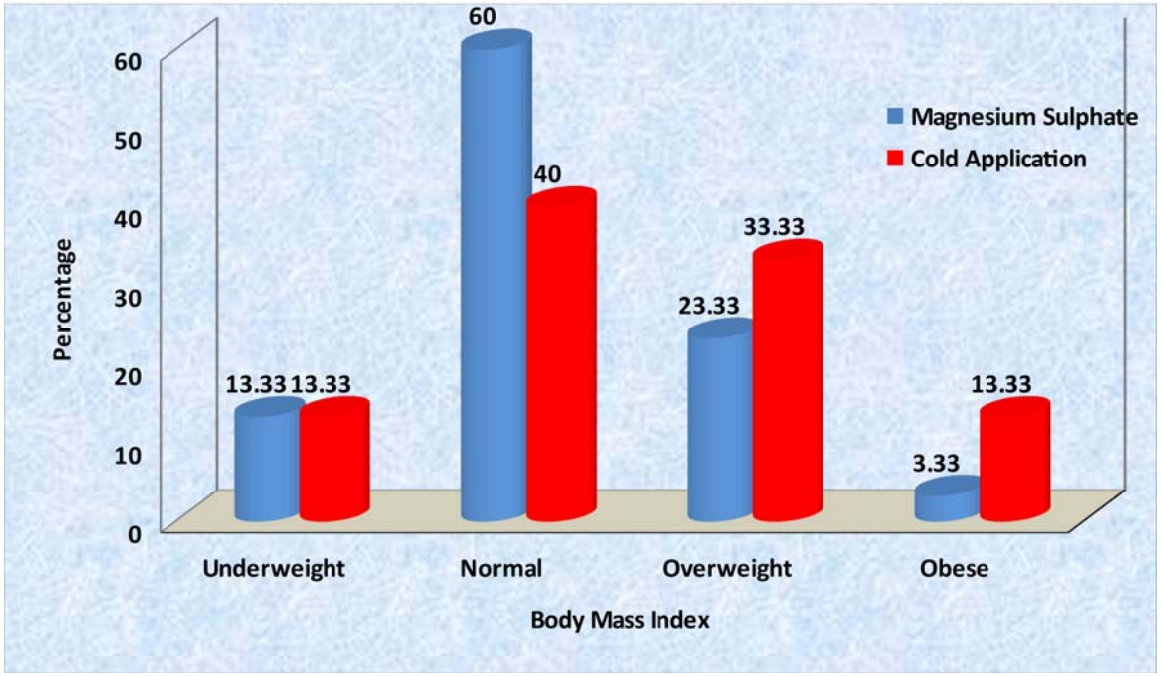


FIGURE 2b Percentage distribution of vein cannulated among the patients in experimental group –I and experimental group –II

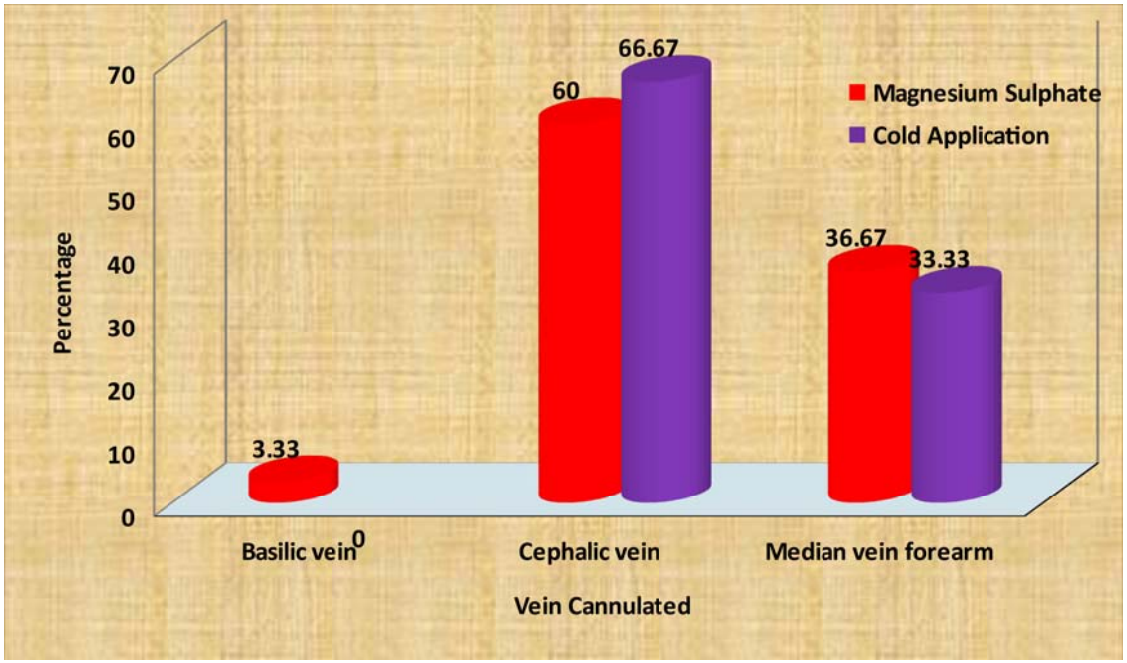


FIGURE 2c Percentage distribution of size of the cannula among the patients experimental group –I and experimental group –II

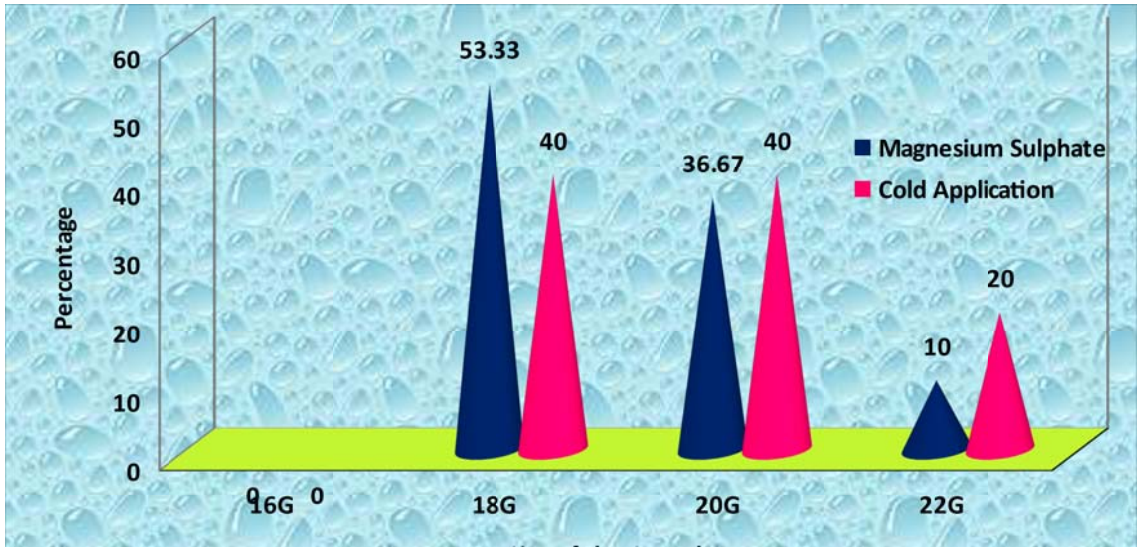
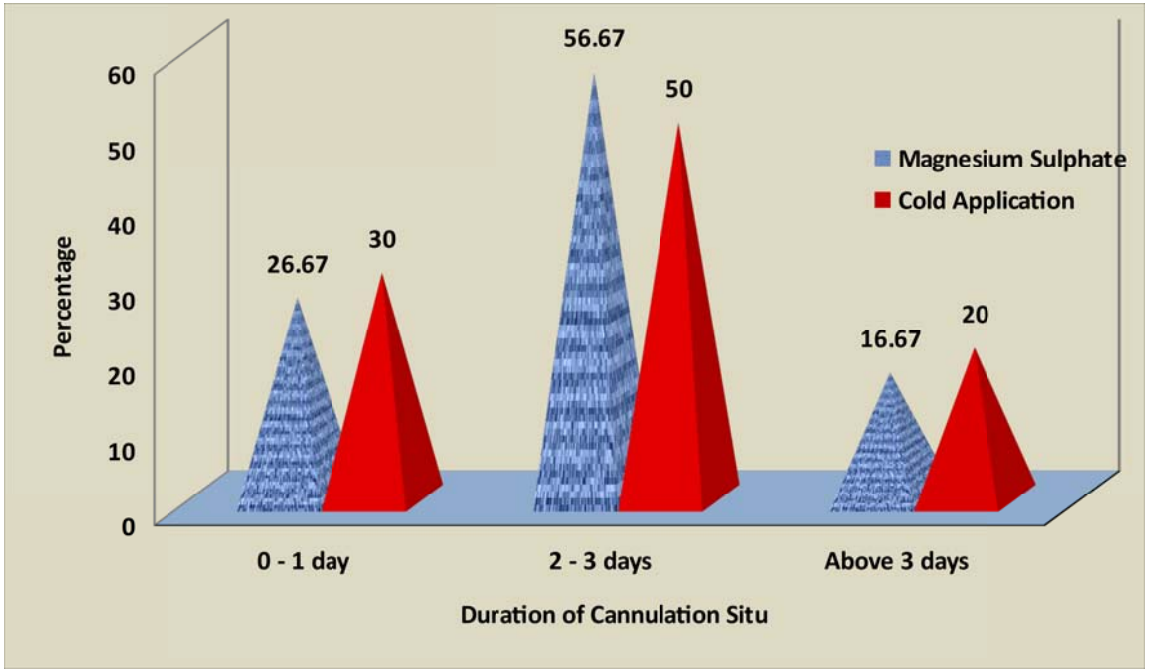


FIGURE 2d percentage distribution of duration of cannula in situ among the patients in experimental group –I and experimental group –II



SECTION II

Table 2: Pre test and post test level of thrombophlebitis among patients received intravenous therapy in experimental group-I

n = 30

LEVEL OF	EXPERIMENTAL GROUP-I	
	Pre Test	Post Test

Mild	4	13.33	21	70
Moderate	20	66.67	0	0
Severe	6	20	0	0

Table 2:

Shows that the pre test majority of the patients in experimental group-I 20 (66.67%) had moderate level of thrombophlebitis, 6 (20%) had severe level of thrombophlebitis, and 4 (13.33%) had mild level of thrombophlebitis.

In post test 21 (70%) had mild level of thrombophlebitis, 9(30%) had no thrombophlebitis among patients in experimental group-I.

FIGURE 3 - Percentage distribution of pre test and post test level of thrombophlebitis among patients received intravenous therapy in experimental group-I

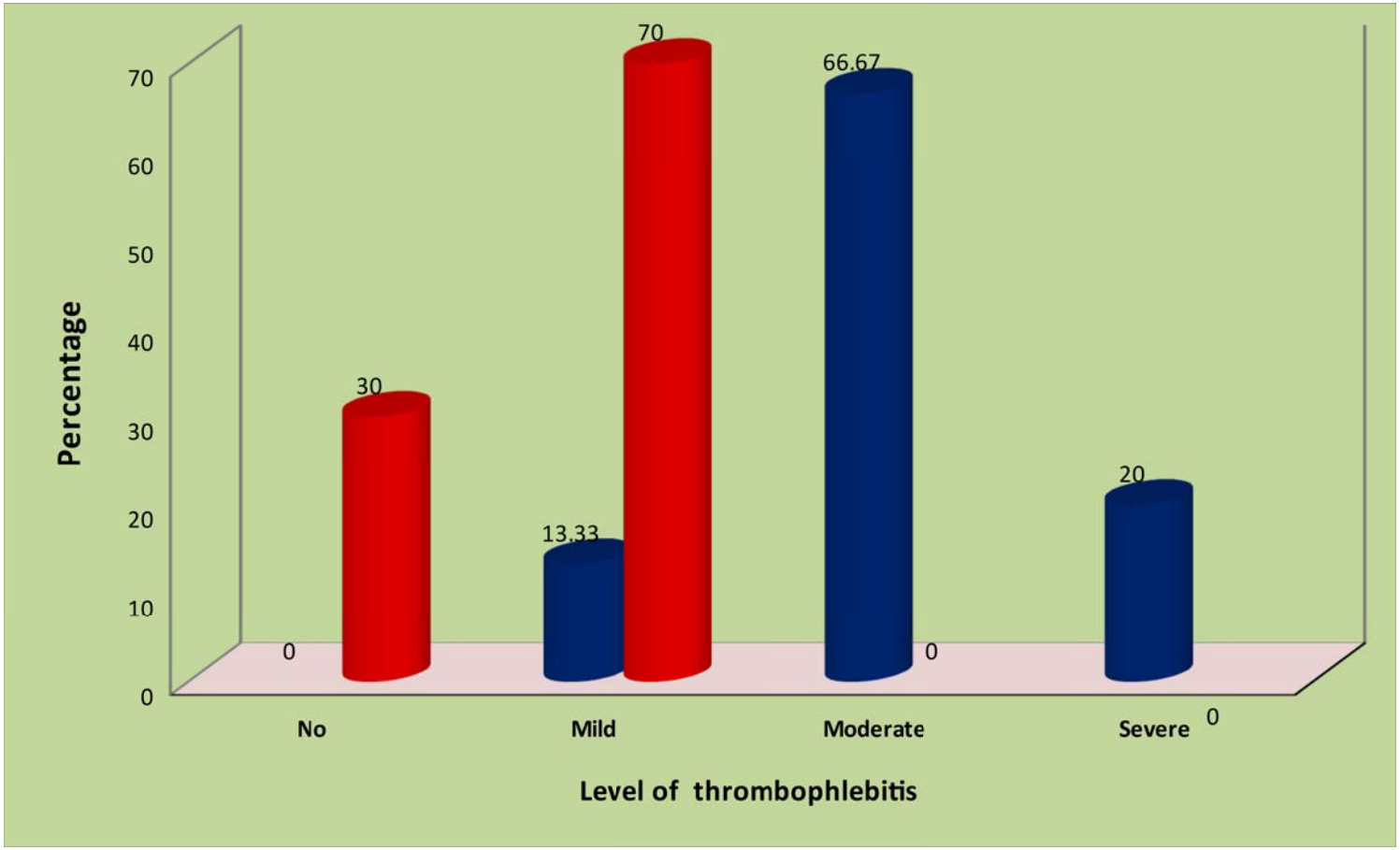


Table 3: Pre test and post test level of thrombophlebitis among patients received intravenous therapy in experimental group -II

n = 30

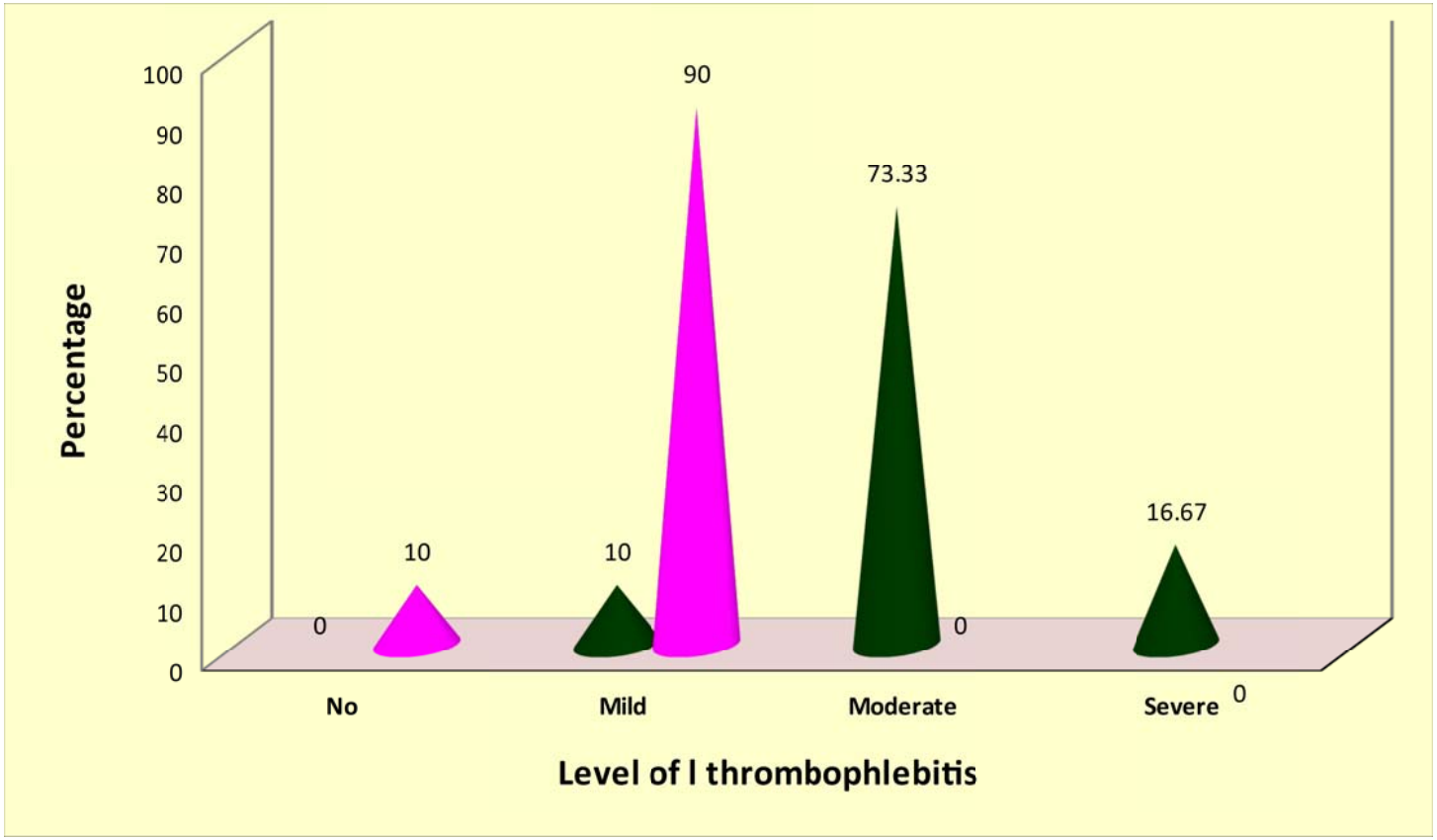
LEVEL OF THROMBOPHLEBITIS	EXPERIMENTAL GROUP-II			
	Pre Test		Post Test	
	f	%	f	%
No	0	0	3	10
Mild	3	10	27	90
Moderate	22	73.33	0	0
Severe	5	16.67	0	0

Table :3

Shows that the pre test majority of the patients in the experimental group-II and 22 (73.33%) had moderate level of thrombophlebitis, 5 (16.67%) had severe level of thrombophlebitis, and 3 (10.%) had mild level of thrombophlebitis.

In post test 27 (90%) had mild level of thrombophlebitis, 3 (10%) no thrombophlebitis.

FIGURE 4 - Percentage distribution of pre test and post test level of thrombophlebitis among patients received intravenous therapy in experimental group-II



SECTION III

Table 4: Comparison of pre test and post test mean score of thrombophlebitis among patients received intravenous therapy in experimental group - I

n = 30

EXPERIMENTAL GROUP-I	TOTAL SCORE	MEAN	S.D	MEAN DIFF.	PAIRED 'T' VALUE
Pretest	20	13.13	2.24	7.13	t = 18.492*** p = 0.000, S
Post Test	20	6.00	0.79		

***p<0.001, S – Significant

Table 4:

Illustrate the calculated pre test thrombophlebitis mean score was 13.13 with the standard deviation of 2.24 and the post test thrombophlebitis mean score was 6 with the standard deviation of 0.79.

The mean difference was 7.13 and the calculated 't' value 18.492 was found to be statistically significant at p< 0.001 level.

Table 5: Comparison of pre test and post test thrombophlebitis mean score among patients received intravenous therapy in experimental group-II

n = 30

EXPERIMENTAL GROUP-II	Total score	Mean	S.D	Mean Diff.	Paired 't' Value
Pretest	20	13.23	2.39	6.76	t = 19.085*** p = 0.000, S
Post Test	20	6.47	0.86		

***p<0.001, S – Significant

Table 5:

Shows that the obtained pre test thrombophlebitis mean score was 13.23 with the standard deviation of 2.39 and the post test thrombophlebitis mean score was 6.47 with the standard deviation 0.86.

The mean difference was 6.76 and the calculated't' value 19.085 was found to be statistically significant at p< 0.001 level.

Table 6: Comparison of post test thrombophlebitis mean score among patients received intravenous therapy in experimental group –I and experimental group – II

n = 60(30+30)

GROUP	Total score	Mean	S.D	Mean Diff.	Unpaired 't' Value
Experimental group – I	20	6.00	0.79	0.47	t = 2.191* p = 0.033, S
Experimental group – II	20	6.47	0.86		

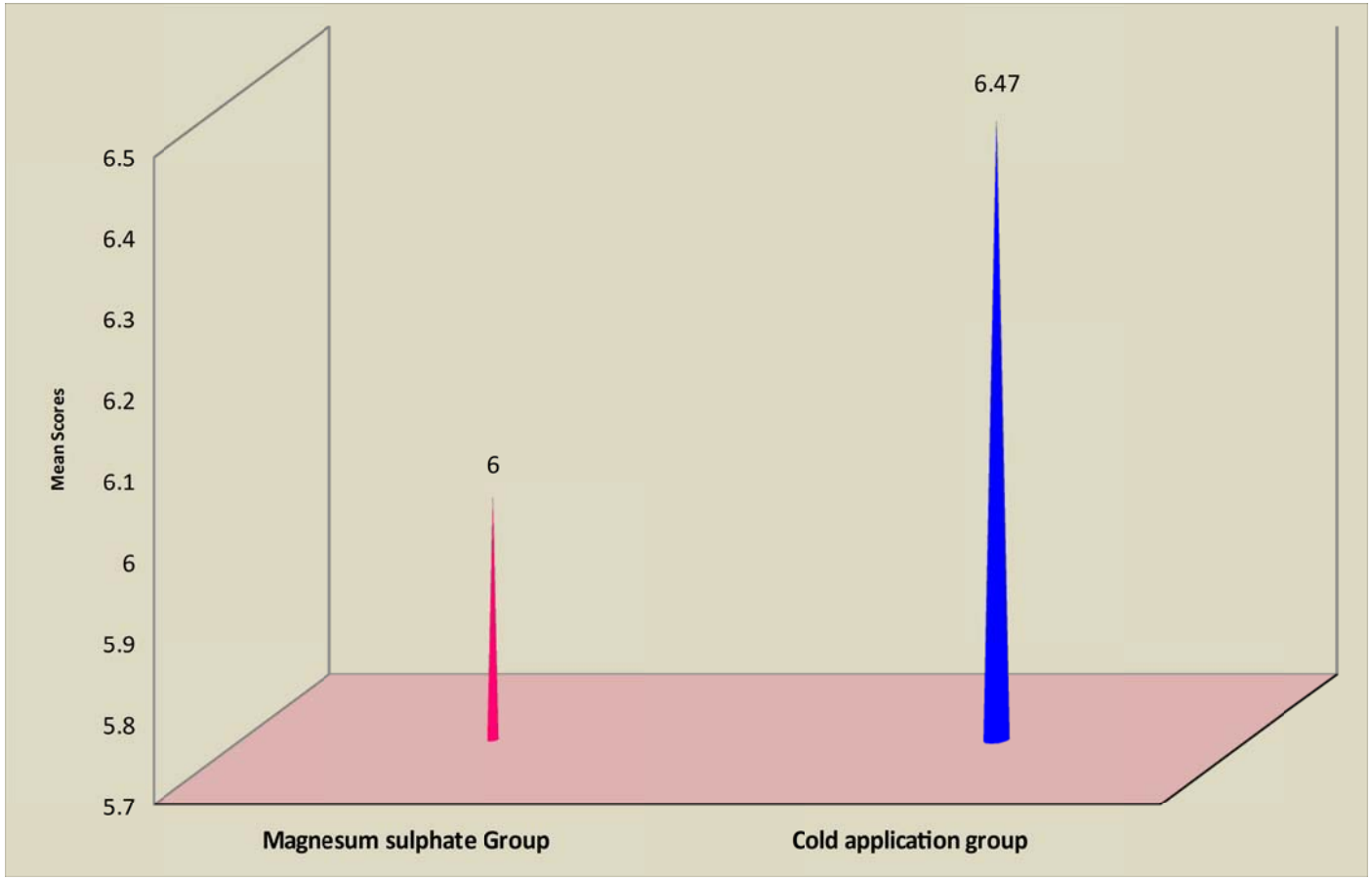
*p<0.05, S – Significant

Table 6:

The experimental group –I thrombophlebitis mean score was 6 with the standard deviation of 0.79. Experimental group –II thrombophlebitis mean score was 6.47 with the standard deviation of 0.86.

The mean difference was 0.47 and calculated 't' value was 2.191 in was found to be stastistically significant at P level <0.05 level.

FIGURE 5- Comparison of post test thrombophlebitis mean score among patients received intravenous therapy in experimental group I and experimental group II



SECTION IV

Table 7: Association of post test level of thrombophlebitis among patients received intravenous therapy in experimental group –I with their selected demographic variables

n = 30

Demographic Variables	No Thrombophlebitis		Mild Thrombophlebitis		Chi-Square Value
	No.	%	No.	%	
Age in years					
21 – 30	1	3.3	6	20.0	$\chi^2 = 5.227$
31 – 40	3	10.0	1	3.3	d.f = 4
41 – 50	1	3.3	5	16.7	p = 0.265
51 – 60	2	6.7	4	13.3	N.S
Above 60	2	6.7	5	16.7	
Gender					$\chi^2 = 0.000$
Male	6	20.0	14	46.7	d.f = 1
Female	3	10.0	7	23.3	p = 1.000 N.S
Diet pattern					$\chi^2 = 1.975$
Vegetarian	5	16.7	6	20.0	d.f = 1
Non-vegetarian	4	13.3	15	50.0	p = 0.160 N.S
Habits					

Demographic Variables	No Thrombophlebitis		Mild Thrombophlebitis		Chi-Square Value
	No.	%	No.	%	
Body Mass Index (BMI)					χ^2 = 1.977
Underweight	1	3.3	3	10.0	d.f = 3
Normal	7	23.3	11	36.7	p = 0.577
Overweight	1	3.3	6	20.0	N.S
Obese	0	0	1	3.3	
Ambulation					χ^2 = 0.824
Mobilized	5	16.7	8	26.7	d.f = 2
Partially mobilized	3	10.0	9	30.0	p = 0.662
Immobilized	1	3.3	4	13.3	N.S
Vein cannulated					χ^2 = 8.827
Basilic vein	1	3.3	0	0	d.f = 2
Cephalic vein	3	10.0	18	60.0	p = 0.012
Median vein forearm	5	16.7	3	10.0	S*
Qualification of nurse who cannulated the patient					χ^2 = 2.080
Nurse	3	10.0	10	33.33	d.f = 3
Ward Incharge Nurse	2	6.7	7	23.3	p = 0.556
Student Nurse	3	10.0	3	10.0	N.S

22G	1	3.3	2	6.7	N.S
Demographic Variables	**No Thrombophlebitis**		**Mild Thrombophlebitis**		**Chi-Square Value**
	No.	**%**	**No.**	**%**	
Duration of cannulation situ					χ^2 = 2.101
0 - 1 day	4	13.3	4	13.3	d.f = 2
2 - 3 days	4	13.3	13	43.3	p = 0.350
Above 3 days	1	3.3	4	13.3	N.S
Type of drugs administered in affected site					χ^2 = 2.468
Antibiotic	2	6.7	8	26.7	d.f = 3
Anticoagulant	2	6.7	4	13.3	p = 0.481
Inotropes	2	6.7	1	3.3	N.S
Other drugs	3	10.0	8	26.7	
History of chronic vascular disease					-
Yes	-	-	-	-	
No	9	30.0	21	70.0	
Type of flush in IV therapy					χ^2 = 0.286
Heparin	2	6.7	3	10.0	d.f = 1

thrombophlebitis among patients received intravenous therapy in the magnesium sulphate application group. The other demographic variables had not shown statistically significant association with the post test level of thrombophlebitis among patients received intravenous therapy.

Table 8: Association of post test level of thrombophlebitis among patients received intravenous therapy in experimental group-II with their selected demographic variables

n = 30

Demographic Variables	No Thrombophlebitis		Mild Thrombophlebitis		Chi-Square Value
	No.	%	No.	%	
Age in years					
21 – 30	0	0	8	26.7	$\chi^2 = 1.975$
31 – 40	1	3.3	4	13.3	d.f = 4
41 – 50	1	3.3	5	16.7	p = 0.740
51 – 60	1	3.3	8	26.7	N.S
Above 60	0	0	2	6.7	
Gender					$\chi^2 = 0.062$
Male	2	6.7	16	53.3	d.f = 1
					p = 0.804

Demographic Variables	No Thrombophlebitis		Mild Thrombophlebitis		Chi-Square Value
	No.	**%**	**No.**	**%**	
Non-vegetarian	1	3.3	18	60.0	d.f = 1
Habits					p = 0.256
Cigarette smoking	-	-	-	-	χ^2 = 0.679 N.S
Alcohol	1	3.3	8	26.7	d.f = 2
Tobacco	0	0	5	16.7	p = 0.712
None	2	6.7	14	46.7	N.S
Body Mass Index (BMI)					χ^2 = 3.889
Underweight	1	3.3	3	10.0	d.f = 3
Normal	0	0	12	40.0	p = 0.274
Overweight	2	6.7	8	26.7	N.S
Obese	0	0	4	13.3	
Ambulation					χ^2 = 3.148

Demographic Variables	No Thrombophlebitis		Mild Thrombophlebitis		Chi-Square Value
	No.	%	No.	%	
Immobilized	2	6.7	6	20.0	
Vein cannulated					N.S $\chi^2 = 1.667$ d.f = 1 p = 0.197
Basilic vein	-	-	-	-	
Cephalic vein	1	3.3	19	63.3	
Median vein forearm	2	6.7	8	26.7	N.S
Qualification of nurse Who cannulated the patients					$\chi^2 = 1.230$ d.f = 3 p = 0.746 N.S
Nurse	2	6.7	12	40.0	
Ward Incharge Nurse	0	0	7	23.3	
Student Nurse	1	3.3	7	23.3	
Physician	0	0	1	3.3	
Size of the					$\chi^2 = 1.296$

Demographic Variables	No Thrombophlebitis		Mild Thrombophlebitis		Chi-Square Value
	No.	%	No.	%	
20G	2	6.7	10	33.3	
22G	0	0	6	20.0	N.S
Duration of cannulation situ					$\chi^2 = 3.457$
0 - 1 day	2	6.7	7	23.3	d.f = 2
2 - 3 days	0	0	15	50.0	p = 0.178
Above 3 days	1	3.3	5	16.7	N.S
Type of drugs administered in affected site					$\chi^2 = 6.296$
Antibiotic	1	3.3	14	46.7	d.f = 3
Anticoagulant	2	6.7	3	10.0	p = 0.098
Inotropes	0	0	3	10.0	N.S
Other drugs	0	0	7	23.3	

Demographic Variables	No Thrombophlebitis		Mild Thrombophlebitis		Chi-Square Value
	No.	%	No.	%	
No	3	10.0	26	86.7	p = 0.735
Type of flush in IV therapy					χ^2 = 0.667 N.S
Heparin	1	3.3	4	13.3	d.f = 1 p = 0.414
Saline	2	6.7	23	76.7	N.S

N.S – Not Significant

The table 8 shows that none of the demographic variables had shown statistically significant association with the post test level of thrombophlebitis among patients received intravenous therapy in the cold application group.

CHAPTER V

DISCUSSION

The main aim of the study was to assess the effectiveness of glycerin magnesium sulphate application versus cold application on thrombophlebitis among patients received intravenous therapy at GVN Hospital, Trichy.

The research design adopted for this study was pre test and post test only design. The setting of the study was GVN Hospital, Trichy. The sample size consists of 60 sample in which 30 were in the experimental group-I [glycerin magnesium sulphate application] and 30 in the experimental group-II [cold application}.

The First objective of the study was to assess the level of thrombophlebitis among patients received intravenous therapy.

Show the pre test majority of the patients in experimental group-I 20 (66.67%) had moderate level of thrombophlebitis, 6 (20%) had severe level of thrombophlebitis, and 4 (13.33%) had mild level of thrombophlebitis. Where as in post test 21 (70%) had mild level of thrombophlebitis, 9(30%) had no thrombophlebitis among patients in experimental group-I.

Show the pre test majority of the patients in the experimental group-II 22 (73.33%) had moderate level of thrombophlebitis, 5 (16.67%) had severe level of thrombophlebitis, and 3 (10%) had mild level of thrombophlebitis. Where as in post test 27 (90%) had mild level of thrombophlebitis, 3 (10%) no thrombophlebitis

Illustrate the calculated pre test thrombophlebitis mean score was 13.13 with the standard deviation of 2.24 and the post test thrombophlebitis mean score was 6 with the standard deviation of 0.79.

The mean difference was 7.13 and the calculated ‘t’ value was 18.492 was found statistically significant at $p<0.001$ level. Hence the stated hypothesis, **H_1: There will be a significant reduction on thrombophlebitis after glycerin magnesium sulphate application among patients received intravenous therapy** was accepted.

The third objective was to assess the effectiveness of cold application on reduction of thrombophlebitis among patients received intravenous therapy.

Show the obtained pre test thrombophlebitis mean score was 13.23 with the standard deviation of 2.39 and the post test thrombophlebitis mean score was 6.47 with the standard deviation 0.86. The mean difference was 6.76 and the calculated ‘t’ value was 19.085 was found to be statistically significant at $p<0.001$ level. Hence the stated hypothesis, **H_2: There will be a significant reduction on thrombophlebitis after cold application among patients received intravenous therapy** was accepted.

The fourth objective was to assess the effectiveness of glycerin magnesium sulphate application versus cold application on reduction of thrombophlebitis among patients received intravenous therapy.

P level <0.001 level. Hence the stated hypothesis, **H_3: Glycerin Magnesium sulphate application will be effective than the cold application on reduction of thrombophlebitis among patients received IV therapy** was accepted.

The fifth objective was to associate the post test level of thrombophlebitis after glycerin magnesium sulphate application with the selected demographic variable of patients received intravenous therapy.

There was a significant association between the post test level of thrombophlebitis among selected demographic variable of patients received IV therapy.

And what the observed chi square value (8.827) was greater than tabulated value (0.041) at 0.05 level. According to the researcher point of view glycerin magnesium sulphate application reduce thrombophlebitis in the IV therapy.

The vein calculated value is less than tabulated value at 0.05 level. Hence the stated hypothesis, **H_4: There will be a significant association between post test level of thrombophlebitis with glycerin magnesium sulphate application among patients received intravenous therapy and their selected demographic variables** was accepted.

The sixth objective to associate the post test level of thrombophlebitis after cold application with the selected demographic variable of patients received intravenous therapy.

There was no significant association between the post test level of

thrombophlebitis with cold application among patients received intravenous therapy and their selected demographic variables was not accepted.

CHAPTER VI

SUMMARY, MAJOR FINDINGS, IMPLICATIONS, RECOMMENDATIONS AND CONCLUSION

This chapter is divided into two sections in the first section summary of the study, findings and conclusion were presented. In the second section implication in the various areas of nursing practice, nursing education, nursing administration, nursing research and recommendations for further study were presented.

SUMMARY OF THE STUDY

The objective of the study was to assess the effectiveness of glycerin magnesium sulphate application versus cold application on thrombophlebitis among patients received intravenous therapy in GVN hospital at Trichy.

A quantitative evaluate approach, true experimental pre test and post test design were adopted for this study. Simple random sampling technique was used to select the sample and sample size was 60. “Conceptual framework” Wiedenbach’s theory model is used for this study.

The tool selected for the present study include structured questionnaire for demographic variables, modified visual infusion phlebitis scale to assess the thrombophlebitis among patients received intravenous therapy.

The intervention of glycerin magnesium sulphate application versus cold application was given, pre-test was done thrice a day for three days. Post test was done with the same scale on fourth day. The nurse researcher herself collected the data by using the modified visual infusion phlebitis scale.

The collected data were analyzed by descriptive and inferential statistics, interpreted in term of objectives and hypothesis of the study. This study revealed the experimental group I mean score 6.00 was lesser than experimental group II mean score 6.47. The obtained 't' value was found that glycerin magnesium sulphate application was effective than the cold application in reduction of thrombophlebitis among patients received intravenous therapy.

MAJOR FINDINGS OF THE STUDY

- Majority 23.33% of participant in experimental group-I belong to the age group 21-30 years, above 60 years and in experimental group-II 30.00% belongs to age group 51-60 years.
- 66.67% in experimental group-I and is 60% of experimental group-II were male.

- 60% in experimental group- I and 40% in experimental group – II had normal body mass index.
- 43.33% in experimental group-I and 40% in experimental group-II were mobilized ambulation.
- 60% of experimental group-I in Cephalic vein and 66.67% of experimental group-II were using vein cannulated.
- 43.33% of experimental group-I in staff nurse and 46.67% of experimental group –II were qualification of nurse.
- 53.33% in 18 gauge needle in experimental group-I and 40% in experimental group-II were size of the cannula.
- 56.67% of experimental group-I had 2 to 3 duration of cannulation site and 50% of experimental group-II had 2 to 3 days duration of cannulation site.
- 36.67% of experimental group-I had other drugs and 15% of experimental group-II had antibiotic were type of drug administered.
- 100% of Experimental group-I and 96.97% of experimental group-II had history of chronic vascular disease.
- 13. 83.33% of experimental group-I and 83.33% of experimental group-II were administered with saline in the IV therapy.

Findings related to study intervention

- In pre test experimental group-I 66.67% had moderate level of thrombophlebitis, 20% had severe level of thrombophlebitis, and 13.33% had mild level of thrombophlebitis.

- In post test 90% had mild level of thrombophlebitis, 10% no thrombophlebitis among patients in experimental group-II.
- In experimental group I pretest thrombophlebitis mean score was 13.13 and the post test thrombophlebitis mean score was 6. The calculated ‘t’ value 18.492 was significant <0.001 level.
- In experimental group II pretest thrombophlebitis mean score was 13.23 and the post test thrombophlebitis mean score was 6.47. The calculated ‘t’ value 19.085 was significant <0.001 level.

IMPLICATIONS

The findings of the study have implication on various areas of nursing practice, nursing education, nursing administration, nursing research and recommendations for further study are present.

Implication of nursing practice

- The practice nurse uses the glycerin magnesium sulphate application versus cold application for thrombophlebitis to reduced it.
- Develop the skills are providing efficient nursing care for early thrombophlebitis and promote comfort.
- The nurse should contribute the evidence based nursing practice through the experiences gained from glycerin magnesium sulphate application to

- ❖ The nurse educator should be oriented, guided and trained in glycerin magnesium sulphate application versus cold application on thrombophlebitis among patients received intravenous therapy.
- ❖ Student can be educated to be practiced and to be published in the nursing journals to make awareness among nursing students.
- ❖ Provide adequate clinical exposure and supervise the students to give effective evidence based nursing care of thrombophlebitis.
- ❖ Encourage the student for effective utilization of research based practice.

Implication for Nursing Administration

- ➢ Collaborate with governing bodies to formulate standard policies and protocols to emphasize nursing during thrombophlebitis among patients received intravenous therapy.
- ➢ Conduct in service education program and continuing nursing education program for effective thrombophlebitis.
- ➢ Update their knowledge about current practice and treatment to effectiveness glycerin magnesium sulphate application through journals, workshops, conference, and seminar.

Implication of Nursing Research

- ➢ Promote effective utilization of research findings on patients who have thrombophlebitis.
- ➢ Disseminate the findings of the research through conferences, seminars and publishing in nursing journals.

LIMITATION

- Sample selection 60
- Date collected period is 4 weeks

RECOMMENDATIONS

- The study recommends the following the future research.
- The similar can be conducted in with larger samples for better generalizations.
- The study can be conducted the effectiveness of glycerin magnesium sulphate application on reduction of thrombophlebitis.
- This study can be conducted in different age group of people.

CONCLUSION

The purpose of this study was to assess the effectiveness of glycerin magnesium sulphate application versus cold application on reducing thrombophlebitis among patients received intravenous therapy in GVN hospital, Trichy. From the above findings, it evident that glycerin magnesium sulphate application is effective than the cold application in reducing thrombophlebitis among patients received intravenous therapy. On the whole, carrying out the present study was really an enriching experience to the investigator. It also helped a great deal to explore and improve the knowledge of the researcher and the respondents.

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ANNEXURE I

LETTER SEEKING EXPERT'S OPINION FOR CONTENT VALIDITY

From

301311701
M.Sc (Nursing) II Year
Thanthai Roever College of Nursing
Perambalur.

To

Respected Sir/Madam,

Sub: Requisition for content validity of tool.

I am doing M.sc (Nursing) II Year in Thanthai Roever college of Nursing, perambalur, under The Tamilnadu, Dr.M.G.R. Medical University Chennai. As a partial fulfillment of my M.Sc (Nursing) Degree programme, I am conducting a research on **"A study to assess the effectiveness of glycerin magnesium sulphate application versus cold application on thrombophlebitis among patients received intravenous therapy at GVN hospital trichy".** A tool has been developed for the research study. I am sending the above stated for your expert and valuable opinion, I will be thankful for your kind consideration. Kindly return it to the Undersigned.

Thanking you

Place: Yours sincerely,

Date: (301311701)

ANNEXURE II

LIST OF EXPERTS OPINION FOR CONTENT VALIDITY OF RESEARCH TOOL

1. Dr. Sakthi Yadhav M.S(Ortho)surgeon, MBA,
   Administrative Officer
   GVN Hospital,
   Trichy.
2. Prof .R. Punithavathi M. Sc. (N),
   Principal,
   Thanthai Roever College of Nursing,
   Perambalur.
3. Prof. V.J. Elizabeth M. Sc. (N),
   Vice Principal,
   Thanthai Roever College of Nursing,
   Perambalur.
4. Dr. S. Rajina Rani M. Sc. (N),Ph.D,
   Principal,
   Doctor's College of Nursing,
   Pudukkottai.
5. Mrs. Dhanalakshmi M. Sc. (N),
   Associate professor,
   HOD of Medical Surgical Nursing,
   Dhanalakshmi College of Nursing,
   Perambalur.
6. MS.Shanthi M.Sc.(N) Reader,
   HOD of Medical Surgical Nursing,
   Dr.G.Sakunthala College of Nursing,
   Murungapettai,
   Mutharasunallur, Trichy.

ANNEXURE III

EVALUATION CRITERIA CHECK LIST FOR VALIDATION

INTRODUCTION

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly place tick mark in the appropriate column and give remarks.

Interpretation of column:

Column I : Meets the criteria

Column II : Partially meet the criteria

Column III : Does not meet the criteria

S.No	Criteria	1	2	3	Remarks
1	Scoring • Adequacy • Clarity • Simplicity				
2	Content • Logical sequence • Adequacy • Relevance				
3	Language • Appropriate • Clarity • Simplicity				
4	Practicability • It is easy to score • Does it precisely • Utility				

Signature: Any Other Suggestion

Name:

Designation:

Address:

ANNEXURE IV

PERMISSION LETTER FOR RESEARCH PURPOSE

From

301311701

II year M.Sc., (Nursing),

Thanthai Roever College Of Nursing ,

Perambalur.

Through

The Principal ,

Thanthai Roever College Of Nursing ,

Perambalur .

To

The Medical Director,

GVN Hospital,

Trichy.

Respected Madam/Sir,

I am doing M.Sc (Nursing) II Year in Thanthai Roever College Of Nursing Perambalur.Under the Tamil Nadu ,Dr.M.G.R. Medical University Chennai. As a Partial Fulfillment of my M.SC., (NURSING) Degree programme, I am going to conduct **"A Study to assess the effectiveness of glycerin magnesium sulphate application versus cold application on thrombophlebitis among patient received intravenous therapy at GVN hospital Trichy".** I would like to conduct the data collection at your esteemed institution. Hence, I request you to kindly grant me permission to conduct my study in your Hospital.

Thanking you

Place : Yours sincerely,

Date : (301311701)

ANNEXURE V

CERTIFICATE OF ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation work **"A study to assess the effectiveness of glycerin magnesium sulphate application versus cold application on thrombophlebitis among patient received intravenous therapy at selected hospital Trichy"** done by 301311701 II year M.sc Nursing, in Thanthai Roever College of Nursing, Perambalur is edited for English language appropriateness by Mrs. Shanthini MA, B.ED., English lecturer.

Signature

ANNEXURE VII

DATA COLLECTION TOOL

SECTION-A DEMOGRAPHIC DATA

Notes: Kindly furnish the following details by placing a tick mark in appropriate choice**.**

1. Age in years

a. 21 -30 ☐ b. 31 -40 ☐

c.41-50 ☐ d. 51-60 ☐

e. Above 60 ☐

2. Gender

a. Male ☐ b. Female ☐

3. Diet pattern

a. Vegetarian ☐ b. Non vegetarian ☐

4. Habits

a. Cigarette smoking ☐ b. Alcohol ☐

c. Tobacco ☐ d. None ☐

5. Body mass index

a. Under weight ☐ b. Normal ☐

c. Over weight ☐ d. Obese ☐

6. Ambulation

a. Mobilized ☐ b. Partially mobilized ☐

c. Immobilized ☐

7. vein cannulated

a. Basilic vein ☐ b. Cephalic vein ☐

c. Median vein forearm ☐

8. Qualification of nurse who cannulated the patient

a. Nurse ☐ b. Ward in charge nurse ☐

c. Student nurse ☐ d. Physician ☐

9. Size of the cannula

a.16G ☐ b.18G ☐

c.20G ☐ d.22G ☐

10. Duration of cannulation situ

a. 0-1 day ☐ b. 2-3 days ☐

c. Above 3 days ☐

11. Types of drugs administered in affected site

a. Antibiotic ☐ b. Anticoagulant ☐

c. Inotropes ☐ d. Other drugs ☐

12. History of chronic vascular disease

a. Yes ☐ b. No ☐

13. Type of flush in IV therapy

a. Heparin ☐ b. Saline ☐

SECTION – B

MODIFIED VISUAL INFUSION PHLEBITIS SCALE

S.N	Criteria	1	2	3	4	Obtaine
1	PAIN	Not experiencing pain	Experiencing pain by touching	Experiencing pain by movement	Experiencing pain while administering medication	
2	SWELLING	Not present	Up to 1cm around the site of	<2cm in proximal/distal area	<4cm in proximal/distal area	
3	TENDERNESS	Not present	Up to 1cm around the site of	<2cm in proximal/distal area	<4cm in proximal/distal area	
4	WARMTH	Not present	Mild	Moderate	Severe	
5	REDNESS	Not present	Mild	Moderate	Severe	

GRADING PROCEDUR

5	No thrombophlebitis
6-10	Mild thrombophlebitis
11-15	Moderate thrombophlebitis
16-20	severe thrombophlebitis